

## **REMARKS**

In connection with the filing of a request for continued examination (“RCE”), the above amended claims and following remarks are submitted in response to the Final Office Action dated August 21, 2006 (“Final Office Action”). Claims 1-14 and 29-37 were previously examined. Claims 1-10, 13-14, 29-35 and 37 were rejected. Claims 11, 12 and 36 were objected to but allowed as claims 47-49 in the Advisory Action dated October 11, 2006. Claims 1, 7, 9 and 29 are amended. Support for the amendments can be found in, for example, paragraphs [0023] and [0025] of the Application. As such, no new matter has been added. Claims 6, 8 and 33-34 are canceled. Claims 1-5, 7, 9-14, 29-32, 35-37 and 47-49 remain in the Application.

### **Allowable Claims**

Applicant notes with appreciation the Examiner’s allowance of claims 47-49. Claims 11, 12 and 36 were objected to as being dependent on a rejected independent claim, but allowable if written in independent form. Claims 47-49 are claims 11, 12 and 36, respectively, written in independent form.

### **I. Claims Rejected Under 35 U.S.C. § 102**

Claims 1-6, 10-13, 29-35 and 37 were rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,878,980 to Gudesen et al. (“*Gudesen*”). A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. MPEP 2131. Applicant respectfully submits that each and every element, either expressly or inherently, in amended claims 1 and 29 and their respective dependent claims is not set forth in the cited references.

Amended independent claims 1 and 29 include the limitation of “wherein the metal nitride layer is one of (a) doped with hafnium or (b) deposited in the presence of excess nitrogen.” Thus, the metal nitride layer may be doped with hafnium or may be deposited in the presence of excess nitrogen to create the excess holes or electron traps in the metal nitride layer. (¶ [0023], [0025]) By contrast, *Gudesen* discloses a memory circuit including a ferroelectric

memory material 2 sandwiched by interlayers 3a, 3b of functional material 3, the interlayers 3a, 3b sandwiched by electrodes 1a, 1b. (col. 8, lns. 1-17; FIG. 3) Interlayers 3a, 3b may be a nitride material, such as titanium nitride (TiN), zirconium nitride (ZrN), hafnium nitride (HfN) or, alternatively, tantalum nitride (TaN), vanadium nitride (VN) or niobium nitride (NbN). (col. 13, lns. 6-7, 17) These materials are listed independently, not in combination. *Gudesen* neither discloses *tantalum nitride doped with hafnium impurities* nor that the metal nitride layer is deposited in the *presence of excess nitrogen*. Thus, *Gudesen* does not disclose each and every limitation of amended claims 1 and 29. Dependent claims 2-5, 7, 9-14 depend from independent claim 1 and therefore include all of its limitations. Dependent claims 30-32 and 35-37 depend from independent claim 29 and therefore include all of its limitations. Accordingly, Applicants respectfully submit that independent claims 1 and 29 and their respective dependent claims are allowable over the cited reference.

## **II. Claims Rejected Under 35 U.S.C. § 103**

Claims 7, 9 and 14 were rejected under 35 U.S.C. § 103(a) as being unpatentable over *Gudesen* in view of the Examiner's remark on pages 5-6 of the Office Action. In view of the remarks above, Applicant respectfully submits that *Gudesen* does not teach or suggest all of the claim limitations of independent claim 1. Dependent claims 7, 9 and 14 depend from independent claim 1 and therefore include all of its limitations. Accordingly, Applicants respectfully submit that dependent claims 7, 9 and 14 are allowable over the cited reference.


### CONCLUSION

In view of the foregoing, it is believed that all claims now pending patentably define the subject invention over the prior art of record, and are in condition for allowance and such action is earnestly solicited at the earliest possible date. If the Examiner believes that a telephone conference would be useful in moving the application forward to allowance, the Examiner is encouraged to contact the undersigned at (310) 500-4787.

Respectfully submitted,

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I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail with sufficient postage in an envelope addressed to: Mail Stop RCE, Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450 on November 2, 2006.

  
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Si Vuong